

Claims

1. A source coding method enabling at least partial subsequent reconstruction of source data with a synthesis filter and an excitation signal thereof having the steps of

-dividing the source data signal into consecutive blocks (1004),

5 -extracting a first set of parameters related to said filter describing properties of a first block covering a first time period (1006), and

10 -extracting a second set of parameters related to said excitation signal for said filter (1012), where said second set of parameters is determined from and describing properties of both the first block and a second block following the first block within a second time period starting later than said first time period and extending outside said first time period.

15 2. A method of claim 1, further having the step of storing at least the part of said second set of parameters or an indication thereof which corresponds to said second block in order to use said stored parameters for extracting at least one parameter of said second block following said first block (622).

20 3. A method of claim 2, further having the step of extracting at least one parameter related to said excitation signal on the basis of said second set of parameters relating to said first and second blocks, and of previously extracted and at least partially stored second set of parameters relating to a block preceding said first block and said first block (1018).

4. A method of claim 3, wherein said at least one parameter is substantially a gain parameter.

5. A method of claim 1-4, wherein said first set of parameters substantially indicates a number of LPC (Linear Predictive Coding) parameters.

25 6. A method of claim 1-5, wherein said second set of parameters substantially indicates a certain excitation vector in an excitation codebook comprising a plurality of vectors.

7. A method of claim 1-6, wherein the starting point of said second time period is varied within said first time period.

8. A method of claim 1-7, wherein at least said second set of parameters is extracted by utilizing substantially an analysis-by-synthesis loop.

9. A method of claim 1-8, wherein said synthesis filter includes at least one of the following: LPC (Linear Prediction Coding) synthesis filter and LTP (Long-Term Prediction) synthesis filter.

10. A method of claim 1-9, wherein said source data is substantially speech.

11. A method of claim 1-10, wherein said first set of parameters is utilized in extracting said second set of parameters.

12. A method for decoding encoded data signal divided into consecutive blocks having the steps of

-obtaining a first set of parameters for constructing a synthesis filter (1104), said first set of parameters describing properties of a first block covering a first time period,

-obtaining a second set of parameters for constructing an excitation signal for said synthesis filter (1106), said second set of parameters describing properties of both the first block and a second block following the first block within a second time period starting later than said first time period and extending outside said first time period,

-obtaining at least part of a previous second set of parameters for constructing an excitation signal for said synthesis filter (1108), said previous second set of parameters describing properties of said first block during at least the time period between the beginning of said first time period and the beginning of said second time period,

-combining the contribution of said previous second set of parameters and said second set of parameters for said excitation signal within said first time period (1110),

-constructing an excitation signal of said first block for said synthesis filter by utilizing said combination (1114, 1116), and

-filtering said constructed excitation signal through said synthesis filter (1118).

13. A method of claim 12, wherein said first set of parameters substantially indicates a number of LPC (Linear Predictive Coding) parameters.

14. A method of claim 12, wherein said second set of parameters substantially indicates a certain excitation codebook vector in an excitation codebook comprising a plurality of vectors.

15. A method of claim 12, further having the step of storing at least the part of said second set of parameters or an indication thereof which corresponds to said second block in order to use said stored parameters for creating the excitation signal of said second block (1112).

16. An electronic device for encoding source data divided into consecutive blocks to be represented by at least a first and a second set of parameters, said device comprising processing means (1202) and memory means (1204) for processing and storing instructions and data, and data transfer means (1208) for accessing data, said device arranged to determine said second set of parameters describing properties of both a first block covering a first time period, properties of said first block described by said first set of parameters, and a second block following the first block within a second time period starting later than said first time period and extending outside said first time period.

17. A device of claim 16, further arranged to receive said first set of parameters from an external entity.

18. A device of claim 16, arranged to extract said first set of parameters by utilizing said source data.

19. A device of claim 16-18, further arranged to store at least the part of said second set of parameters or an indication thereof corresponding to said second block in order to use said stored parameters for extracting at least one parameter of said second block following said first block.

20. A device of claim 16-19, further arranged to extract at least one parameter relating to said excitation signal on the basis of said second set of parameters related to said first and second blocks, and of previously extracted and at least partially stored second set of parameters relating to a block preceding said first block and said first block.

21. A device of claim 16-20, further arranged to vary the starting point of said second time period within said first time period.

22. A device of claim 16-21, arranged to extract said second set of parameters by utilizing substantially an analysis-by-synthesis loop.

5 23. A device of claim or 16-22, arranged to utilize said first set of parameters in extracting said second set of parameters.

24. A device of claim 16-23 that is substantially a mobile terminal, a network element, a data storage device, an audio recorder or a dictating machine.

10 25. A device of claim 16-23 that is substantially an encoder module or an encoder-decoder module.

26. An electronic device for decoding source data divided into consecutive blocks, said device comprising processing means (1202) and memory means (1204) for processing and storing instructions and data, and data transfer means (1208) for accessing data, said device arranged to obtain

15 a first set of parameters for constructing a synthesis filter, said first set of parameters describing properties of a first block covering a first time period,

a second set of parameters for constructing an excitation signal for said synthesis filter, said second set of parameters describing properties of both the first block and a second block following the first block within a second time period starting later than said first
20 time period and extending outside said first time period,

at least part of a previous second set of parameters for constructing an excitation signal for said synthesis filter, said previous second set of parameters describing properties of said first block during at least the time period between the beginning of said first time period and the beginning of said second time period,

25 said device further arranged to combine the contribution of said previous second set of parameters and said second set of parameters for said excitation signal within said first time period,

to construct an excitation signal of said first block for said synthesis filter by utilizing said combination, and

to filter said constructed excitation signal through said synthesis filter.

27. A device of claim 26 that is substantially a mobile terminal, a network element, a data storage device, an audio playback device or a dictating machine.

28. A device of claim 26 that is substantially a decoder module or an encoder-decoder module.

29. A computer program for encoding source data divided into consecutive blocks to be represented by at least a first and a second set of parameters, said program comprising code means to determine said second set of parameters describing properties of both a first block covering a first time period, properties of said first block described by said first set of parameters, and a second block following the first block within a second time period starting later than said first time period and extending outside said first time period.

30. A carrier medium carrying the computer executable program of claim 29.

31. A computer program for decoding source data represented by at least a first and a second set of parameters, where said first set of parameters relate to a synthesis filter and said second set of parameters to an excitation signal for said filter, said data divided into consecutive blocks, said first set of parameters describing properties of a first block covering a first time period and said second set of parameters describing properties of both the first block and a second block following the first block within a second time period starting later than said first time period and extending outside said first time period, said program comprising code means,

by utilizing at least part of a previous second set of parameters for constructing an excitation signal for said synthesis filter, said previous second set of parameters describing properties of said first block during at least the time period between the beginning of said first time period and the beginning of said second time period,

to combine the contribution of said previous second set of parameters and said second set of parameters for said excitation signal within said first time period,

to construct an excitation signal of said first block for said synthesis filter by utilizing said combination, and

to filter said constructed excitation signal through said synthesis filter.

32. A carrier medium carrying the computer executable program of claim 31.